Mathematical Biosciences

an international journal

Volume 67 1983

Elsevier Biomedical

Mathematical Biosciences

an international journal

Editor **John A. Jacquez**

Editorial Assistant
MRS. MARIANNE JACQUEZ
490 Huntington Drive
Ann Arbor, Michigan 48104

Associate Editors
Richard Bellman
Founding Editor
Department of Electrical Engineering
University of Southern California
Los Angeles, California 90007

Robert M. May
Department of Biology
Princeton University
Princeton, New Jersey 08540

Book Review Editor
Alan S. Perelson
Los Alamos Scientific Lab.
P.O. Box 1663
Los Alamos, New Mexico 87545

Charles J. Mode
Department of Mathematics
and Institute for Population Studies
Drexel University
Philadelphia, Pennsylvania 19104

Editorial Board

Rutherford Aris
Department of Chemical Engineering
and Materials Science
University of Minnesota

George A. Bekey
Biomedical Engineering
University of Southern California

Leslie E. Blumenson
Roswell Park Memorial Institute
Buffalo, New York, 14263

Chin Long Chiang
Department of Biomedical
and Environmental Health Sciences
University of California, Berkeley

Claudio Cobelli
Department of Electrical Engineering
University of Padua
35100 Padua, Italy

Charles Delisi
National Cancer Institute
Bethesda, Maryland 20014

George F. Estabrook
Department of Botany
The University of Michigan

Stephen Grossberg
Department of Mathematics
Boston University 02215

John Z. Hearon
National Institute of Arthritis
Bethesda, Maryland 20014

Herbert W. Hethcote
Department of Mathematics
University of Iowa
Iowa City, Iowa 52242

Birger Jansson
M. D. Anderson Hospital
and Tumor Institute
Houston, Texas 77030

Samuel Karlin
Department of Mathematics
Stanford University

H. G. Othmer
Department of Mathematics
The University of Utah
Salt Lake City, Utah 84112

John Rinzel
National Institute of Arthritis
Bethesda, Maryland 20014

Michael A. Savageau
Department of Microbiology
The University of Michigan

Lawrence Stark
Physiological Optics
University of California, Berkeley

John L. Stephenson
NHLBI, NIH
Bethesda, Maryland 20014

Mathematical Biosciences

an international journal

Volume 67 1983

JACQUES DEMONGEOT (Grenoble, France) AND MICHEL LAURENT (Orsay, France)
Sigmoidicity in Allosteric Models 1

ALEX S. PAPADOPOULOS (Charlotte, NC)
A Stochastic Model for BOD and DO with Random Initial Conditions and Distance Dependent Velocity 19

CHIN LONG CHIANG (Berkeley, CA)
The Theory of Multistage Carcinogenesis 33

DONAT-P. HÄDER AND UHLAND BURKART (Marburg, F.R.G.)
Mathematical Simulation of *Dictyostelium* Pseudoplasmodia Movements 41

GEBHARD GEIGER (Garching, West Germany)
On the Dynamics of Evolutionary Discontinuities 59

MAREK KIMMEL (New York, NY), BARBARA KIMMEL (Gliwice, Poland), AND JANUSZ SKIERSKI (Warszawa, Poland)
Mathematical Model of Leukemic-Cell Circulation in the Mouse 81

R. NALLASWAMY (Madurai, India)
Global Stability of a System of Two Interacting Species with Convective and Dispersive Migration 101

HOMER T. HAYSLETT JR. (Waterville, ME) AND DALE S. SOLOMON (Orono, ME)
A Matrix Model for Predicting Foliage Weight of Trees by Age Classes 113

ANNOUNCEMENT 123

REINHARD BÜRGER (Vienna, Austria)
Dynamics of the Classical Genetic Model for the Evolution of Dominance 125

E. NEELY ATKINSON, ROBERT BARTOSZYŃSKI, BARRY W. BROWN, AND JAMES R. THOMPSON (Houston, TX)
On Estimating the Growth Function of Tumors 145

H. KNOLLE (Hannover, West Germany)
A Relation between Growth Fraction and Cell Loss Factor of Cell Populations with Distributed Cycle Times 167

W. Y. TAN (Memphis, TN)
On the Distribution of the Number of Mutants at the Hypoxanthine-Quanine Phosphoribosal Transferase Locus in Chinese Hamster Ovary Cells 175

JOHN C. HENNESSEY (Baltimore, MD)
Testing the Predictive Power of a Proportional-Hazard Semi-Markov Population Model 193

GEORGE H. WEISS AND JOAN L. ARON (Bethesda, MD)
Note on the Formulation of a Stochastic Model of Superinfection 213

FUCHUAN SUN, PAMELA TAUCHI, AND LAWRENCE STARK (Berkeley, CA)
Binocular Alternating Pulse Stimuli: Experimental and Modeling Studies of the Pupil Reflex to Light 225

P. LÁNSKÝ (Prague, Czechoslovakia)
Inference for the Diffusion Models of Neuronal Activity 247

BOOK REVIEWS

CLAUDIO COBELLI
Quantitative Approaches to Metabolism: the Role of Tracers and Models in Clinical Medicine (Derek G. Cramp) 261

A. P. DOBSON
The Mathematical Theory of the Dynamics of Biological Populations II (R. W. Hiorns and D. Cooke) 263

IRVING ADLER
Croissance Végétale et Morphogénèse (Roger V. Jean) 265

BOOKS RECEIVED 267

ANNOUNCEMENT 269